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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,858	03/04/2004	Shunichi Narumi	520.39873VX1	3756
20457	7590	10/05/2005	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			WATKO, JULIE ANNE	
			ART UNIT	PAPER NUMBER
			2653	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/791,858

Applicant(s)

NARUMI ET AL.

Examiner

Julie Anne Watko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3,4,6,8-10,12 and 14-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,4,6,8-10,12 and 14-24 is/are rejected.
- 7) ☒ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/811,437.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 03/04/2004.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: In the paragraph beginning on page 11, line 15, as amended on March 4, 2004, the specification recites "the magnetic pole tip layer 11 is formed on the magnetic gap layer 10 and the non-magnetic step layer". This is inconsistent with page 5, lines 2-5, which state "the magnetic pole tip layer 11 comprises ... a magnetic gap layer 10". Because the magnetic pole tip layer 11 comprises the magnetic gap layer 10, it is unclear in what sense a magnetic gap layer is "formed on" part of itself.

Appropriate correction is required.

### ***Claim Objections***

2. Claims 8-10 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 8 depends from claim 3, which recites "said magnetic pole tip layer comprises three layers of magnetic layer/non-magnetic layer/magnetic layer" in lines 2-3.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 4, 6, 9, 17 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation “a magnetic gap layer” in lines 1-2. A “non-magnetic layer” has already been recited in claim 3, line 3, as part of the magnetic pole tip layer. Applicant has failed to identify any disclosed layer, on which the magnetic pole tip is formed as required by claim 4, line 5, which layer is distinct from both of the two non-magnetic layers recited in claims 3 and 4. Because “Applicant chooses not to define in the claims whether the “non-magnetic layer” is the same as the gap layer” as recited on page 8, and because Applicant has failed to identify any disclosed layer that satisfies the claimed limitations, the claim is interpreted as the magnetic gap layer being the same as the non-magnetic layer of the magnetic pole tip layer. This interpretation is consistent with the specification, page 5, lines 2-5, which state “the magnetic pole tip layer 11 comprises ... a magnetic gap layer 10”. Because the magnetic pole tip layer comprises the gap layer, it is unclear in what sense a magnetic gap layer is “formed on” part of itself. The claim is indefinite.

Claims 6 and 9 are indefinite by virtue of their dependency from claim 4.

Claims 17 and 21 each recite the limitation “said magnetic pole tip layer is formed on the magnetic gap layer and the non-magnetic layer” in the last two lines. Because the magnetic pole tip layer comprises the gap layer, it is unclear in what sense a magnetic gap layer is “formed on” part of itself.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 3, 4, 6, 8-10, 12 and 14-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barr et al (US Pat. No. 6657816 B1) in view of Sasaki et al (US Pat. No. 6130805).

As recited in claim 3, Barr et al show a lower magnetic core 85 formed on a substrate 82, a magnetic pole tip layer (including 92, 96 and 98) formed on the lower magnetic core wherein said magnetic pole tip layer comprises three layers of magnetic layer 92/non-magnetic layer 98/magnetic layer 96, an upper magnetic core 104 coupled in its front end (upper end in Fig. 3A; left end in Fig. 4) to the magnetic pole tip layer, coupled in its rear end (right end in Fig. 4) to the lower magnetic core, having a width of the front end smaller than that of the rear end (see Fig. 3A), and having at least partially a shape gradually reducing the width from the rear end to the

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front end (see Fig. 3A), coils 94A disposed between the upper magnetic core and the lower magnetic core, and an insulating layer formed between the coils and the upper magnetic core or the lower magnetic core, wherein the distance between the upper magnetic core 104 and the lower magnetic core 85 in a rear end region (rightward of “ZERO THROAT LEVEL” in Fig. 4) away from a air bearing surface in a region connecting the magnetic pole tip layer to said upper magnetic core is shorter than the distance between the top surface of said magnetic pole tip layer (including 96) in the air bearing surface (“ABS LEVEL”, see Fig. 4) and said lower magnetic core 85.

As recited in claim 3, Barr et al is silent regarding whether a width of the front end of the upper magnetic core is larger than that of a rear end of the magnetic pole tip layer.

As recited in claim 3, Sasaki et al show that a width of a front end of an upper magnetic core 86 is larger than that of a rear end of a magnetic pole tip layer 81 (see Fig. 41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to widen a width of a front end of the upper magnetic core larger than that of a rear end of the magnetic pole tip layer of Barr et al as taught by Sasaki et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to increase a contact area between a pole tip and a core so as to effectively remove magnetic flux saturation at a contact portion, so as to achieve sufficiently satisfactory writing property as taught by Sasaki et al (see col. 11, lines 22-37).

As recited in claim 4, to the extent understood, Barr et al show a magnetic gap layer 98 formed at least near the air bearing surface on said lower magnetic core, a non-magnetic layer

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112 formed in a region such that at least the magnetic gap layer is distanced from the air bearing surface, and said magnetic pole tip layer is formed on the non-magnetic layer.

As recited in claim 4, Barr et al are silent regarding the non-magnetic layer having a thickness increased with moving away from the air bearing surface.

As recited in claim 4, Sasaki et al show a non-magnetic layer 79, on which a magnetic pole tip (including 80 and 81) is formed, the non-magnetic layer 79 having a thickness increased with moving away from the air bearing surface.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to increase a thickness of a non-magnetic layer in the head of Barr et al as taught by Sasaki et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to increase the thickness in order to define a zero throat height as is notoriously well known in the art.

As recited in claims 6, 18 and 22; Barr et al show that said magnetic pole tip layer (including 90 and 98) is formed on the lower magnetic core 85 near the air bearing surface, and is formed on the non-magnetic layer 112 in a region away from the air bearing surface.

As recited in claims 8-10, Barr et al show that said magnetic pole tip layer comprises three layers corresponding to a magnetic layer 90/non-magnetic layer 98/magnetic layer 96.

As recited in claim 12, Barr et al are silent regarding the claimed range of dimensions. See rationale and motivation stated in the office action mailed August 24, 2004, pages 5-6. It is noted by the Examiner that Applicant has failed to present any evidence that the claimed dimensions are critical.

As recited in claims 14, 20 and 24, Barr et al are silent regarding whether the saturation magnetic flux density of the magnetic pole tip layer is higher than that of any one of the upper magnetic core and the lower magnetic core.

As recited in claims 14, 20 and 24, Sasaki et al show that a magnetic pole tip layer ("pole chip may be advantageously made of any kind of a magnetic material having a high saturation magnetic flux density", see col. 17, lines 10-18) has a higher saturation magnetic flux density than an upper magnetic core ("permalloy", see col. 12, lines 49-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the materials of Sasaki et al in the head of Barr et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to use a higher saturation magnetic flux density material from the pole tip in order to enable recording on a magnetic recording medium of high coercive force while decreasing a thickness of a tip layer as is notoriously well known in the art (see, for example, the teaching quoted in the office action mailed August 24, 2004, on page 8).

As recited in claim 15, Barr et al show Barr et al show a magnetic disk apparatus (see Fig. 1) comprising a magnetic recording media 14, a motor 15 to drive the magnetic recording media, a magnetic head 35 to read from and write onto the magnetic recording media, and a mechanism 12 for positioning the magnetic head, wherein at least one inductive head according to claim 3 is mounted as the magnetic head.

As recited in claim 15, Barr et al are silent regarding the specific numeric ranges claimed. See rationale and motivation stated in the office action mailed August 24, 2004, pages 6-7. It is



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noted by the Examiner that Applicant has failed to produce any evidence that the numeric ranges are critical.

Regarding claim 16: See statement of rejection above for claim 15.

As recited in claims 17 and 21, to the extent understood, Barr et al show a magnetic gap layer 98 formed at least near the air bearing surface on said lower magnetic core, and a non-magnetic layer 112 formed in a region such that at least the magnetic gap layer is distanced from the air bearing surface, and said magnetic pole tip layer is formed on the non-magnetic layer.

As recited in claims 17 and 21, Barr et al are silent regarding a thickness increased with moving away from the air bearing surface.

See teachings, rationale, and motivation for combining teachings stated above for claim 4.

Regarding claims 19 and 23: See statement of rejection above for claim 12.

***Allowable Subject Matter***

8. Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

9. Applicant's arguments with respect to the independent claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597. The examiner can normally be reached on Mon, Tue, Thu & Fri until 4:45PM, Wed until 3:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Julie Anne Watko  
Primary Examiner  
Art Unit 2653

October 1, 2005  
JAW

A handwritten signature in black ink, appearing to read 'Julie Anne Watko', with a long horizontal flourish extending to the right.